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EXAMINER

KAYRISH, MATTHEW

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 12/10/2007, with respect to claim 4 have been considered but are moot in view of the new grounds of rejection. Claim 4 has been amended. Claims 1-3 have been canceled. Claims 4-10 remain pending.

Drawings

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because:

The arguments filed 12/10/2007 state that the claimed invention is intended to disclose the structure of figure 4. Figure 4 is inaccurate with the claimed invention because the claimed invention discloses:

A substrate, a first layer...that serves as a primary lower pole;

A first non-magnetic layer that contacts said first layer only at said edge and extends therefrom, said non-magnetic layer having a tip surface that is coplanar with that of said primary pole;

A second layer of high magnetic permeability material that serves as a second lower pole that fully covers and contacts said primary pole and said non-magnetic layer, above which serves as a ledge.

These limitations are not specifically disclosed in figure 4 of the present application. Referring to figure 4 upon reading claim 4 renders confusion and is unclear where such limitation are located on the figure. The examiner believes that figures 6 or

14 are closer fits, however, these figures do not disclose the claimed non-magnetic layer. Figure 15 discloses a more accurate image however, does not disclose a completed magnetic head. The examiner respectfully requests a complete side view, i.e. view like that of claim 4, displaying each of the claimed details.

Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for describing a magnetic write head with all the claimed parts, does not reasonably provide enablement for the claimed in a clear, concise picture of the claimed invention. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to visualize the invention commensurate in scope with these claims.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 4 recites the limitation "said lower pole" in the limitation that starts "an upper magnetic pole that overlies...". There is insufficient antecedent basis for this limitation in the claim because it is not clear which lower pole this limitation refers to, as there is previously claimed a primary pole and a secondary pole.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Stoev et al (US Patent Number 6724572).

Regarding claim 4, Stoev discloses:

A magnetic write head, having an air bearing surface (ABS) (figure 4, item 33), comprising:

On a substrate (figure 4, item 28), a first layer of high magnetic permeability material (figure 4, item 208), having an edge whose surface is normal to said substrate and parallel to said ABS (figure 4), that serves as a primary lower magnetic pole (column 5, lines 32-43);

A first non-magnetic layer (figure 13/15, item 610, unlabeled in figure 4) that contacts said first layer only at said edge and extends away therefrom (figure 15), said non-magnetic layer having a top surface that is coplanar with that of said primary pole (figure 15);

A second layer (figure 4, item 210 & 220) of high magnetic permeability that serves as a secondary lower pole (column 5, lines 32-43) that fully covers and contacts said primary pole and said non-magnetic layer (figure 4), above which it serves as a ledge having a width (column 5, lines 32-43);

A field coil over (figure 4, item 118), and insulated from (figure 4, item 45), said lower poles;

An upper magnetic pole (figure 4, item 72) that overlies said field coil (figure 4), contacts said lower pole at a second side that is opposite to said first side (figure 4, via item 60; column 3, lines 27-51), and that is separated from said ledge by a second layer of non-magnetic material that is a write gap (figure 4, item 4), said upper pole having, at the write gap, a width equal to said ledge width, whereby it defines a track width (column 1, lines 48-58 implies the poles define the track width);

Said ledge extending away from said primary pole by an amount (figure 4, items 212 & 214).

Regarding claim 6, Stoev discloses the features of base claim 4, as stated in the 102 rejection above, and further discloses:

Wherein said non-magnetic layer is silicon oxide, aluminum oxide, tantalum oxide, AL, Rh, Ru, Cu, NiCu or Ta (column 9, lines 5-9).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 5, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoev et al, in view of Sasaki et al (US Publication Number 2003/0151849).

Regarding claim 5, Stoev discloses the features of base claim 4, as stated in the 102 rejection above, but fails to specifically disclose:

Wherein said first layer of high magnetic permeability material is NiFe, CoNiFe, FeTaN, FeAlN, CoTaN, CoAlN or CoFeN and has a thickness between about 0.3 and 3 microns.

Sasaki disclose:

A magnetic write head, having an air bearing surface (ABS) (paragraph 122; figure 22, item A), comprising:

On a substrate (figure 22, item 31), a first layer of high magnetic permeability material (figure 22, item 40), having an edge whose surface is normal to said substrate and parallel to said ABS (figure 22), that serves as a primary lower magnetic pole (paragraphs 124 & 125);

A second layer (figure 22, item 42) of high magnetic permeability that serves as a secondary lower pole (paragraphs 124 & 125) that fully covers and contacts said primary pole (figure 22);

A field coil over (figure 22, item 53), and insulated from (figure 22, items 44 & 48), said lower poles;

An upper magnetic pole (figure 22, item 56) that overlies said field coil (figure 22), contacts said lower pole at a second side that is opposite to said first side (figure 22, via item 43), and that is separated from said ledge by a second layer of non-magnetic material that is a write gap (figure 22, item 58), said upper pole having, at the write gap, a width equal to said ledge width (figure 22B), whereby it defines a track width (paragraph 136).

Wherein said first layer of high magnetic permeability material is NiFe, CoNiFe, FeTaN, FeAlN, CoTaN, CoAlN, or CoFeN and has a thickness between about 0.3 and 3 microns (paragraph 124).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to fabricating the pedestal of Stoev to this thickness, as taught by Sasaki, because this thickness helps to increase the magnetic flux density, but these materials have a relatively low saturation level, therefore, the magnetic flux density is under more strict control for accurately recording data.

Regarding claim 7, Stoev discloses the features of base claim 4 as noted in 102 rejection above, but fails to specifically disclose:

Wherein said second layer of high magnetic permeability material is NiFe, CoNiFe, FeTa_N, FeAl_N, CoTa_N, CoAl_N, or CoFe_N and has a thickness between about 0.2 and 2 microns.

Sasaki disclose:

Wherein said second layer of high magnetic permeability material (paragraph 125, item 42) is NiFe, CoNiFe, FeTa_N, FeAl_N, CoTa_N, CoAl_N, or CoFe_N and has a thickness between about 0.2 and 2 microns (page 9, paragraph 125).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to fabricate the second layer of Stoev to have a general thickness relatively near that of the first layer, as taught by Sasaki, because this will provide for better interaction between the two layers which allows for a more accurate and precise control of the magnetic flux density.

Regarding claim 8, Stoev discloses the features of base claim 4 as noted in 102 rejection above, but fails to specifically disclose:

Wherein said upper magnetic pole is NiFe, CoNiFe, FeTa_N, FeAl_N, CoTa_N, CoAl_N, or CoFe_N and has a thickness between about 0.3 and 3 microns.

Sasaki disclose:

Wherein said upper magnetic pole is NiFe, CoNiFe, FeTa_N, FeAl_N, CoTa_N, CoAl_N, or CoFe_N and has a thickness between about 0.3 and 3 microns (page 11, paragraph 136).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to fabricating the pedestal of Stoev from this material with

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this thickness, as taught by Sasaki, because this thickness helps to increase the magnetic flux density, but these materials have a relatively low saturation level, therefore, the magnetic flux density is under more strict control for accurately recording data.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stoev et al, in view of Komuro et al (US Patent Number 6530141).

Regarding claim 9, Stoev discloses the features of base claim 4 as noted in 102 rejection above, but fails to specifically disclose:

Wherein said track width is between about 0.05 and 1 micron.

Komuro discloses:

A magnetic write head, having an air bearing surface (ABS), comprising:

On a substrate (figure 16A, item 136), a first layer of high magnetic permeability material (figure 15, item 15), having an edge whose surface is normal to said substrate and parallel to said ABS (inherent), that serves as a primary lower magnetic pole (column 13, lines 1-32);

A second layer (figure 15, item 18) of high magnetic permeability that serves as a secondary lower pole (column 12, lines 58-63) that fully covers and contacts said primary pole (figure 15), above which it serves as a ledge having a width (column 6, lines 1-3);

A field coil over (figure 15, item 13), and insulated from (figure 15, items 12 & 14), said lower poles;

An upper magnetic pole (figure 15, item 11) that overlies said field coil (figure 15), contacts said lower pole at a second side that is opposite to said first side (figure 16A, via items 140-142), and that is separated from said ledge by a second layer of non-magnetic material that is a write gap (figure 15, item 17), said upper pole having, at the write gap, a width equal to said ledge width, whereby it defines a track width (column 6, lines 1-3).

Said ledge extending away from said primary pole by an amount (figure 15);

Wherein said track width is between about 0.05 and 1 micron (column 6, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the head of Stoev with a track width of the given width, as taught by Komuro, because this provides for a large recording density.

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stoev, in view of Takano et al (US Patent Number 5850326).

Regarding claim 10, Stoev discloses the features of base claim 4 as noted in 102 rejection above, but fails to specifically disclose:

Wherein said amount that said ledges extend away from said poles is between about 0.1 and 1 micron.

Takano discloses:

A magnetic write head, having an air bearing surface (ABS), comprising:

A first layer of high magnetic permeability material (figure 14, item 10b), having an edge whose surface is normal to said substrate and parallel to said ABS (figure 14; inherent), that serves as a primary lower magnetic pole (column 10, line 16);

A field coil over (figure 14, item 21), and insulated from said lower poles (column 11, lines 14-24);

An upper magnetic pole (figure 14, item 10a) that overlies said field coil (figure 14), contacts said lower pole at a second side that is opposite to said first side (figure 12b), and that is separated from said ledge by a second layer of non-magnetic material that is a write gap (figure 14, item g1);

Wherein said amount that said ledges extend away from said poles is between about 0.1 and 1 micron (figure 14, column 11, lines 39-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the ledge of Stoev extend from the poles between about .1 and 1 micron, as taught by Takano, because this allows for accurately use focused ion beaming, which will make the recording of the signal stronger and more accurate, as stated by Takano in column 11, lines 47-49.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW G. KAYRISH whose telephone number is (571)272-4220. The examiner can normally be reached on 8am - 5pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

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Matthew G. Kayrish /Matthew G. Kayrish/

3/21/2008

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Examiner, Art Unit 2627

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